(11)Publication number : **2000-347173**
(43)Date of publication of application : **15.12.2000**

(51)Int.Cl. **G02F 1/1333**
G02F 1/1339

(21)Application number : **2000-150687**
(22)Date of filing : **22.05.2000**

(71)Applicant : **LG PHILIPS LCD CO LTD**
(72)Inventor : **KO TAE WUN**
PARK SUNG-IL
KWAK DONG YEUNG
LEE GUN HEE
PARK KWANG SUP

(30)Priority

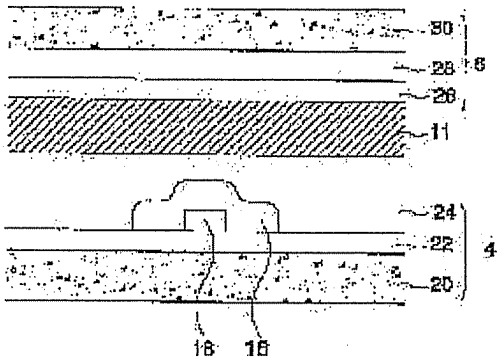
Priority number : **99 9918567** Priority date : **21.05.1999** Priority country : **KR**
99 9928572 **14.07.1999** **KR**

(54) LIQUID CRYSTAL DISPLAY DEVICE AND ITS MANUFACTURE

(57)Abstract:

PROBLEM TO BE SOLVED: To strengthen adhesive power of a sealant with a lower plate in a high aperture ratio liquid crystal panel to which an organic insulation layer is applied.

SOLUTION: The liquid crystal display device is provided with an organic protective layer 24 and a gate insulation layer 22 which are patterned so as to make a sealant 11 be directly in contact with a substrate. Adhesive power of the sealant and a lower plate 4 is strengthened by totally or partially removing the organic protective layer or the organic protective layer and the gate insulation layer in the region which is coated with the sealant so as to make the sealant directly be in contact with the gate insulation layer or a lower glass 20.



LEGAL STATUS

[Date of request for examination] 22.05.2000

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 3488855

[Date of registration] 31.10.2003

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

(19)日本国特許庁（ＪＰ）　(12)公開特許公報（Ａ）　(11)特許出願公開番号
特開2000－347173
（P2000－347173A）
(43)公開日　平成12年12月15日(2000.12.15)

(51)Int.Cl.⁷		識別記号	FI		テーマコード(参考)
Ｇ０２Ｆ	1/1333	５０５	Ｇ０２Ｆ 1/1333	５０５	
		５００		５００	
	1/1339	５０５	1/1339	５０５	

審査請求　有　　請求項の数38　ＯＬ　（全 16 頁）

(21)出願番号　特願2000－150687(P2000－150687)
(22)出願日　平成12年５月22日(2000.5.22)
(31)優先権主張番号　１９９９－１８５６７
(32)優先日　平成11年５月21日(1999.5.21)
(33)優先権主張国　韓国（ＫＲ）
(31)優先権主張番号　１９９９－２８５７２
(32)優先日　平成11年７月14日(1999.7.14)
(33)優先権主張国　韓国（ＫＲ）

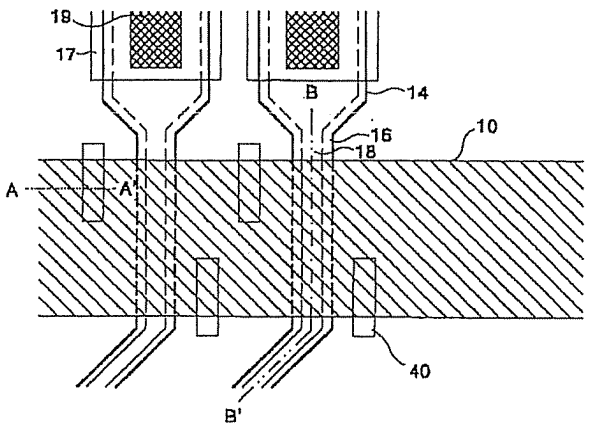
(71)出願人　599127667
エルジー　フィリップス　エルシーディー　カンパニー　リミテッド
大韓民国　ソウル，　ヨンドンポーク，　ヨイドードン　20
(72)発明者　コー，　タエ　ウン
大韓民国　ソウル，　ヨンサンーク，　ハンカングロー２ガ，　319－３号
(74)代理人　100109726
弁理士　園田　吉隆　（外１名）

最終頁に続く

(54)【発明の名称】　液晶表示装置とその製造方法

(57)【要約】
【課題】　本発明は有機絶縁膜が適用された高開口率液晶パネルでシーリング剤と下板の接着力を強化させることができる液晶表示装置とその製造方法に関することである。
【解決手段】　本発明による液晶表示装置はシーリング剤が基板と直接接するようにパタニングされた有機保護膜とゲート絶縁膜とを具備することを特徴とする。本発明によると、シーリング剤が塗布される領域の有機保護膜または有機保護膜及びゲート絶縁膜を全体または部分的に除去してシーリング剤がゲート絶縁膜または下部ガラスと直接に接するようにすることでシーリング剤と下板の接着力を強化させることができる。

FIG.6



【００３０】図２２は本発明の第７実施例による液晶表示装置のゲートリンク部の一部分を拡大して図示したものである。図２２でゲートリンク（３４）を横切る方向に設けられるシーリング部（１０）の領域の有機保護膜を部分的に除去することでシーリング剤が有機保護膜の下部に位置するゲート絶縁膜と部分的に接触されるようにする。この場合、ゲートリンク（３４）の間の有機保護膜に並んだライン形態のホール（５８、６０、６２）を形成する。特に、シーリング剤の塗布時、気泡の発生を防止するためにラインのホールの両端部または一側端部をシーリング部（１０）の外側まで延長して形成する。具体的に、第１ラインホール（５８）のように両端部をシーリング部（１０）の外側まで延長して形成したり第２または第３ラインホール（６０、６２）のように両端部をシーリング部（１０）の外側まで延長して形成する。

【００３１】図２３は図２２で図示されたシーリング部（１０）を水平方向のＡ－Ａ′線に沿って切断した垂直断面を図示したものである。同図を参照して本発明によるゲートリンク部の製造方法を以下に示す。下部ガラス（２０）上にゲートリンク（３４）を形成して、全面にゲート絶縁層（２２）を形成する。このゲート絶縁層（２２）の全面に有機保護膜（２４）を形成した後、マスクパターンを利用してシーリング剤（１１）が塗布される位置の有機保護膜（２４）をエッチングする。換言すれば、ゲートリンク（３４）の間の有機保護膜（２４）にラインホール（５８、６０、６２）を形成する。この場合、ラインホール（５８、６０、６２）の両端部または一側端部がシーリング部の外側まで延長して形成する。その次、シーリング部（１０）にシーリング剤（１１）を塗布して上板と下板を合着させる。これによって、シーリング剤（１１）がゲート絶縁膜（２２）と部分的に接触することでシーリング剤（１１）と下板の接着力を強化させることができる。

【００３２】図２４は本発明の第７実施例による液晶表示装置のデータリンク部の一部分を拡大して図示したものである。図２４でデータリンク（１６）を横切る方向に設けられるシーリング部（１０）の領域の有機保護膜を部分的に除去することでシーリング剤が有機保護膜の下部に位置するゲート絶縁膜と部分的に接触されるようにする。この場合、データリンク（１６）の間の有機保護膜にデータリンク（１６）と並んだライン形態のホール（５８、６０、６２）を形成する。特に、シーリング剤の塗布時、気泡の発生を防止するためにラインのホールの両端部または一側端部をシーリング部（１０）の外側まで延長して形成する。具体的に、第１ラインホール（５８）のように両端部をシーリング部（１０）の外側まで延長して形成したり第２または第３ラインホール（６０、６２）のように両端部をシーリング部（１０）の外側まで延長して形成する。

【００３３】図２５は図２３で図示されたシーリング部（１０）を水平方向のＡ－Ａ′線に沿って切断した垂直断面を図示したものである。同図を参照して本発明によるデータリンク部の製造方法を以下に示す。下部ガラス（２０）の全面にゲート絶縁層（２２）を形成する。このゲート絶縁層（２２）の上にデータリンク（１６）を形成した後、全面に有機保護膜（２４）を形成する。その次、マスクパターンを利用してシーリング剤（１１）が塗布される位置の有機保護膜（２４）を部分的にエッチングする。換言すれば、データリンク（１６）の間の有機保護膜（２４）にラインホール（５８、６０、６２）を形成する。この場合、ラインホール（５８、６０、６２）の両端部または一側端部をシーリング部の外側まで延長して形成する。その次、シーリング部（１０）にシーリング剤（１１）を塗布して上板と下板を合着させる。この場合、シーリング剤（１１）がゲート絶縁膜（２２）と部分的に接触することでシーリング剤（１１）と下板の接着力を強化させることができる。

【００３４】

【発明の効果】上述したように、本発明による液晶表示装置及びその製造方法によれば、シーリング剤が塗布される領域の有機保護膜とゲート絶縁膜を部分的または全面的に除去してシーリング剤がガラス基板と直接接するようにすることでシーリング剤と下板の接着力を強化させることができる。また、本発明による液晶表示素子及びその製造方法ではシーリング剤が塗布される領域の有機保護膜とゲート絶縁膜を部分的または全面的に除去してシーリング剤をゲート絶縁膜と直接接触させることでシーリング剤と下板の接着力を強化させることができる。これによって、有機保護膜が適用された開口率の大きな液晶表示装置でシーリング剤と有機保護膜または有機保護膜とゲート絶縁膜の接着力の弱化に伴う外部衝撃による液晶材料漏れを防止することができる。

【００３５】以上説明した内容を通して当業者であれば本発明の技術思想を逸脱しない範囲で多様な変更及び修正が可能であることがわかる。従って、本発明の技術的範囲は明細書の詳細な説明に記載された内容に限らず特許請求の範囲によって定めなければならない。

【図面の簡単な説明】

【図１】　図１は通常の液晶パネルを表す平面図である。

【図２】　図２は図１でシーリング部と交差するデータリンク部の一部分を拡大して表した平面図である。

【図３】　図３Ａは図２に図示されたシーリング部をＡ－Ａ′線に沿って切断した垂直の断面を表して、図３Ｂはそのｂ－ｂ′線に沿って切断した垂直の断面を表した断面である。

【図４】　図４は図１でシーリング部と交差するゲートリンク部の一部分を拡大して表した平面図である。

【図５】　図５Ａは図４に図示されたシーリング部をＡ

ーA′線に沿って切断した垂直の断面を表して、図5Bはそのb－b′線に沿って切断した垂直の断面を表した断面である。

【図6】 図6は本発明の第1実施例による液晶表示装置のデータリンク部を部分的に拡大して表した平面図である。

【図7】 図7Aは図6に図示されたシーリング部をA－A′線に沿って切断した下板の垂直の断面図である。

【図8】 図8は本発明の第1実施例による液晶表示装置のゲートリンク部を部分的に拡大して表した平面図である。

【図9】 図9は本発明の第2実施例による液晶表示装置のデータリンク部を部分的に拡大して表した平面図である。

【図10】 図10は図9に図示されたシーリング部をA－A′線に沿って切断した下板の垂直の断面図である。

【図11】 図11は本発明の第2実施例による液晶表示装置のゲートリンク部を部分的に拡大して表した平面図である。

【図12】 図12は本発明の第3実施例による液晶表示装置のデータリンク部を部分的に拡大して表した平面図である。

【図13】 図13は図12に図示されたシーリング部をA－A′線に沿って切断した下板の垂直の断面図である。

【図14】 図14は本発明の第4実施例による液晶表示装置のデータリンク部を部分的に拡大して表した平面図である。

【図15】 図15は図14に図示されたシーリング部をA－A′線に沿って切断した下板の垂直の断面図である。

【図16】 図16は本発明の第5実施例による液晶表示装置のデータリンク部を部分的に拡大して表した平面図である。

【図17】 図17A及び図17Bは図15に図示されたシーリング部をA－A′線及びB－B′線に沿って切断した下板の垂直の断面図である。

【図18】 図18は本発明の第6実施例による液晶表示装置のゲートリンク部を部分的に拡大して表した平面図である。

【図19】 図19は図18に図示されたシーリング部をA－A′線に沿って切断した下板の垂直の断面図である。

【図20】 図20は本発明の第6実施例による液晶表示装置のデータリンク部を部分的に拡大して表した平面図である。

【図21】 図21は図20に図示されたシーリング部をA－A′線に沿って切断した下板の垂直の断面図である。

【図22】 図22は本発明の第7実施例による液晶表示装置のゲートリンク部を部分的に拡大して表した平面図である。

【図23】 図23は図22に図示されたシーリング部をA－A′線に沿って切断した下板の垂直の断面図である。

【図24】 図24は本発明の第7実施例による液晶表示装置のデータリンク部を部分的に拡大して表した平面図である。

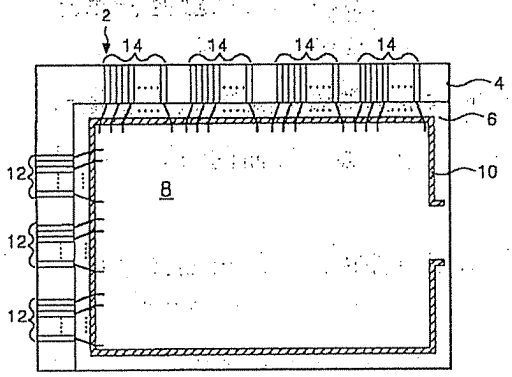
【図25】 図25は図24に図示されたシーリング部をA－A′線に沿って切断した下板の垂直の断面図である。

【符号の説明】

2：液晶パネル　4：下板
6：上板　8：画像表示部
10：シーリング部　11：シーリング剤
12：ゲートパッド部　14：データパッド部
16、44：データリンク　17：透明電極
18、18a、46：半導体パターン　19：コンタクトホール
20：下部ガラス　22：ゲート絶縁膜
22：ゲート絶縁層　24：有機保護膜
26：マトリックス　30：上部ガラス
32：液晶　34：ゲートリンク
40：ホール　48：領域
50：データライン　52：多数個のホール
54：ライン型のホール
58、60、62：ライン形態のホール
58：第1ラインホール　60：第1ラインホール
62：第3ラインホール

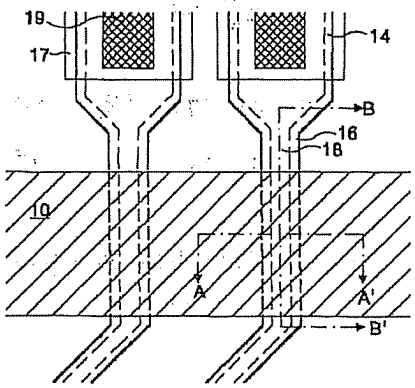
【図1】

FIG. 1
PRIOR ART



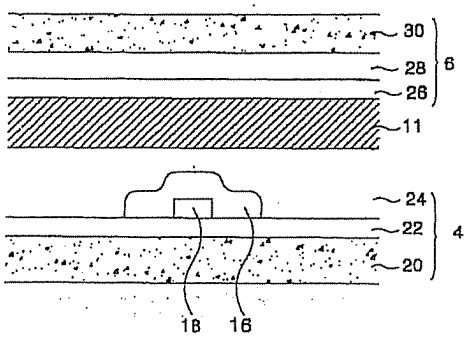
【図2】

FIG. 2
PRIOR ART



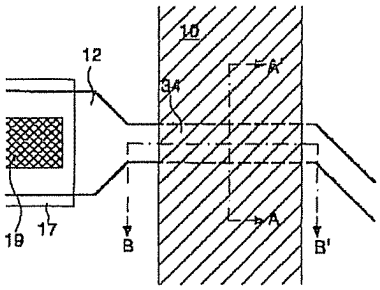
【図3】

FIG. 3A
PRIOR ART



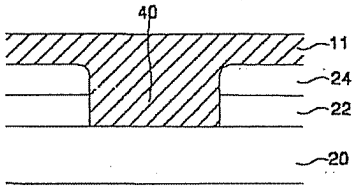
【図4】

FIG. 4
PRIOR ART



【図7】

FIG.7



【図6】

FIG. 3B
PRIOR ART

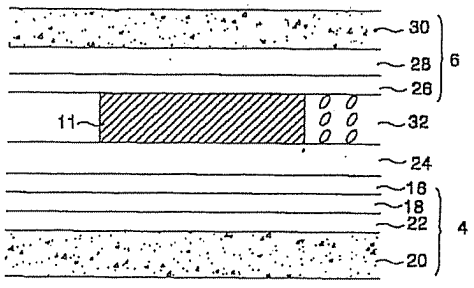
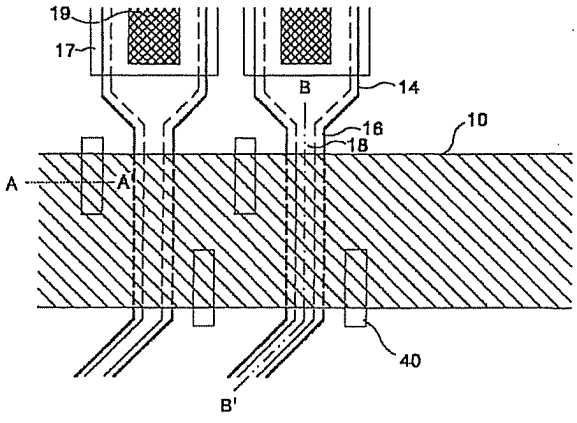
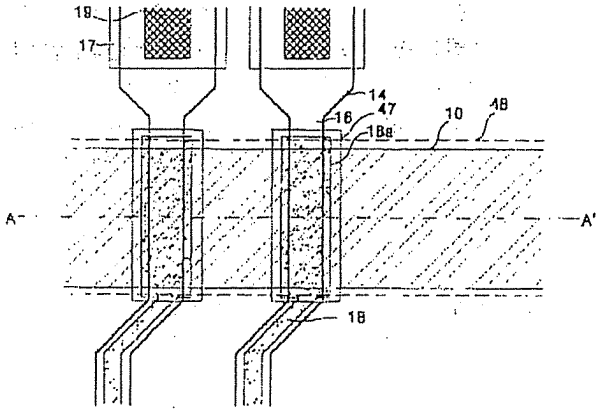


FIG.6



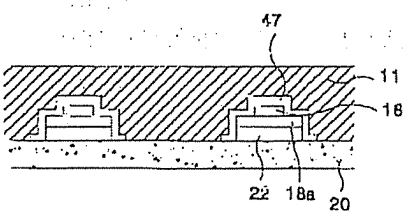
【図12】

FIG. 12



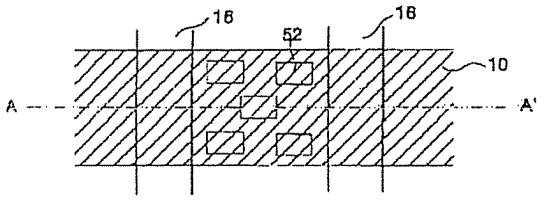
【図13】

FIG. 13



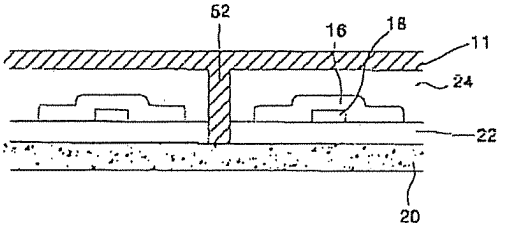
【図14】

FIG. 14



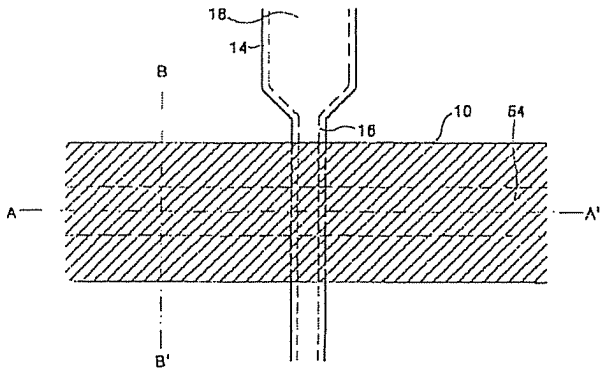
【図15】

FIG. 15



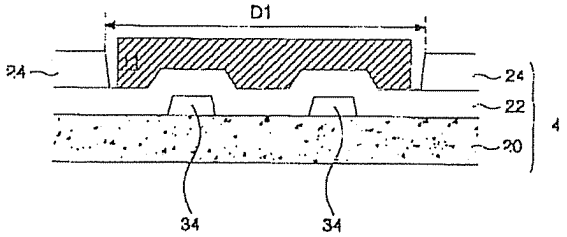
【図16】

FIG. 16



【図19】

FIG. 19



【図17】

FIG. 17A

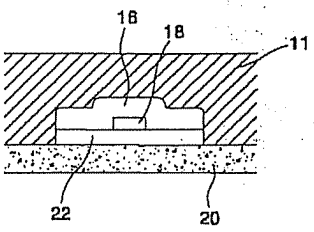
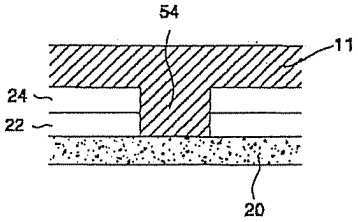
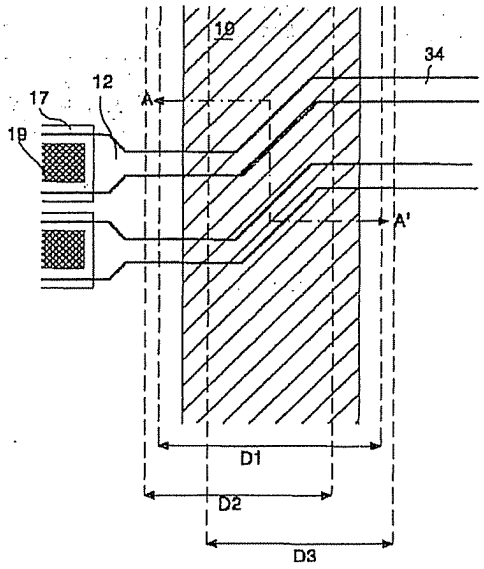


FIG. 17B



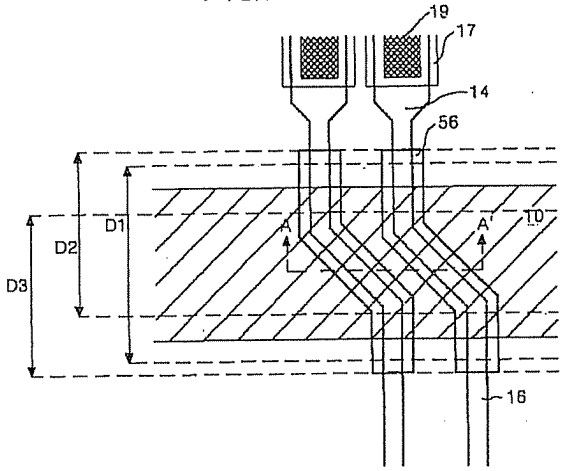
【図18】

FIG. 18



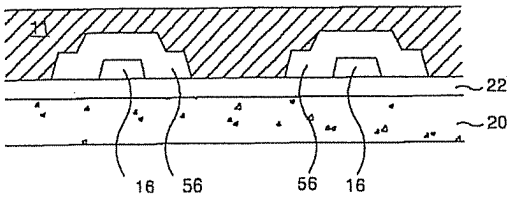
【図20】

FIG. 20



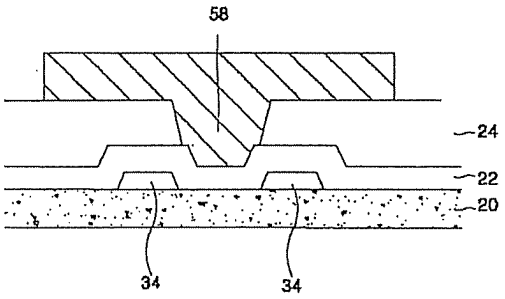
【図21】

FIG. 21



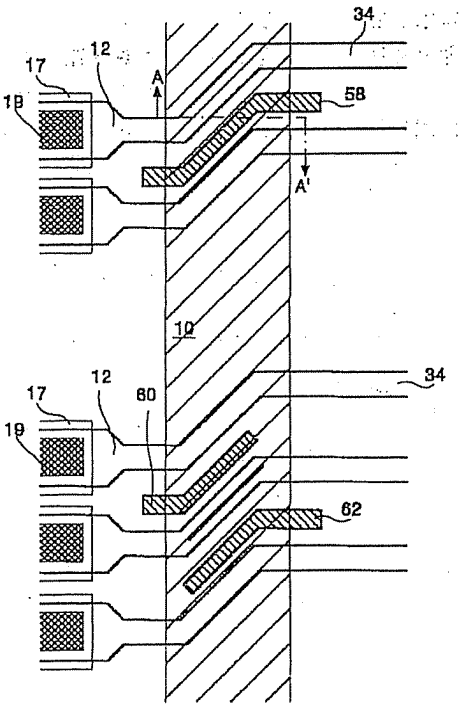
【図23】

FIG. 23



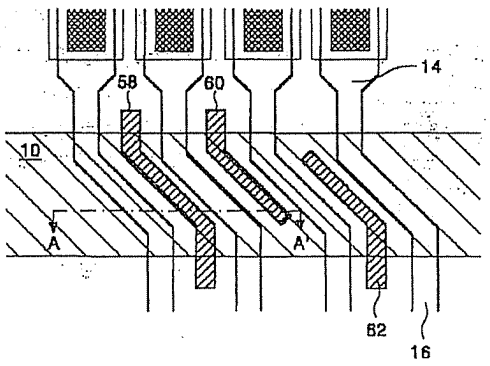
【図22】

FIG. 22



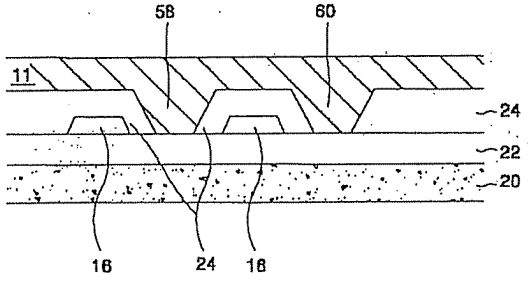
【図24】

FIG. 24



【図25】

FIG. 25



フロントページの続き

(72)発明者 パク， スン イル
大韓民国 キョンキードー， アンヤンーシ， ドンガンーク， ホガエードン，1108－8

(72)発明者 クワク，ドン ユン
大韓民国 ダエクーシ， ダルセオーク，ソンギュンードン， グリーン マンション， 103－1108号

CLAIMS

[Claim(s)]

[Claim 1] The liquid crystal display characterized by to provide the sealing agent applied in the direction which intersects the electrode link to which a substrate, an electrode line, an electrode pad, and the aforementioned electrode line and the aforementioned electrode pad are connected, and the aforementioned electrode line and the electrode link between the aforementioned electrode pads, and the organic protective coat by which was formed on the aforementioned substrate and patterning was carried out so that the aforementioned sealing agent may touch a substrate and directly and gate dielectric film.

[Claim 2] The liquid crystal display according to claim 1 characterized by forming at least one or more holes in the organic protective coat and gate dielectric film between the 2nd electrode link to which the 2nd electrode line, the 2nd electrode pad, and the aforementioned 2nd electrode line and the aforementioned 2nd electrode pad are connected, and the aforementioned electrode link.

[Claim 3] The aforementioned hole is a liquid crystal display according to claim 2 characterized by being extended and formed to the exterior of the field where the aforementioned sealing agent is applied.

[Claim 4] The liquid crystal display according to claim 2 characterized by being etched in the configuration of the trough which continued in the direction in which the sealing agent of the above [an aforementioned organic protective coat and an aforementioned insulator layer] was formed.

[Claim 5] An aforementioned organic protective coat and gate dielectric film are a liquid crystal display according to claim 4 characterized by being etched more widely than the field where the aforementioned sealing agent is applied.

[Claim 6] The liquid crystal display according to claim 4 characterized by providing further the protective layer for preventing the aforementioned electrode link touching the aforementioned sealing agent directly.

[Claim 7] The aforementioned protective coat is a liquid crystal display according to claim 6 characterized by being the semi-conductor pattern formed on the gate dielectric film on them when the aforementioned electrode link is a data link simultaneously formed with an electrode material like a gate link and the aforementioned gate link.

[Claim 8] The aforementioned protective coat is a liquid crystal display according to claim 6 characterized by being the transparent film applied so that the semi-conductor pattern and gate dielectric film of a data link and its lower part might be protected when the aforementioned electrode link is a data link.

[Claim 9] The width of face of the aforementioned semi-conductor pattern is a liquid crystal display according to claim 8 characterized by being set up more widely than the aforementioned data link.

[Claim 10] The electrode link to which a substrate, an electrode line, an electrode pad, and the aforementioned electrode line and the aforementioned electrode pad are connected, The sealing agent applied in the direction which intersects the aforementioned electrode line and the electrode link between the aforementioned electrode pads, It is the liquid crystal display which is formed on the aforementioned substrate, possesses gate dielectric film and an organic protective coat, and is characterized by carrying out patterning of the aforementioned organic protective coat so that the aforementioned sealing agent may touch the aforementioned gate dielectric film and directly.

[Claim 11] The aforementioned organic protective coat is a liquid crystal display according to claim 10 characterized by providing the field etched so that the aforementioned sealing agent might, on the whole, touch the aforementioned gate dielectric film.
[Claim 12] The liquid crystal display according to claim 8 characterized by providing further the protective coat for protecting the aforementioned data link when the aforementioned electrode link is a data link.
[Claim 13] The aforementioned protective coat is a liquid crystal display according to claim 12 characterized by being a transparent electrode.
[Claim 14] The etching field of the aforementioned organic protective coat is a liquid crystal display according to claim 11 characterized by being formed more widely than the field where the aforementioned sealing agent is applied.
[Claim 15] The aforementioned organic protective coat is a liquid crystal display according to claim 10 characterized by providing the field etched so that the aforementioned sealing agent might touch the aforementioned gate dielectric film selectively.
[Claim 16] The etching field of the aforementioned organic protective coat is a liquid crystal display according to claim 15 characterized by being formed so that it may be located in the outside of a part where it has the trough configuration which continued along with the direction where the aforementioned sealing agent is applied, and the sealing agent of the one flank is applied.
[Claim 17] It is the liquid crystal display according to claim 15 which possesses the 2nd electrode link to which the 2nd electrode line, the 2nd electrode pad, and the aforementioned 2nd electrode line and the aforementioned 2nd electrode pad are connected, and is characterized by forming the etching field of the aforementioned organic protective coat between the aforementioned electrode links.
[Claim 18] The liquid crystal display component according to claim 17 characterized by being formed so that it may be extended to the outside of a part where the sealing agent of the above [the both ends of the etching field of the aforementioned organic protective coat] is applied.
[Claim 19] The liquid crystal display component according to claim 17 characterized by being extended and formed to the outside of a part where the sealing agent of the above [the edge of the both sides of the etching field of the aforementioned organic protective coat] is applied.
[Claim 20] The electrode link to which a substrate, an electrode line, an electrode pad, and the aforementioned electrode line and the aforementioned electrode pad are connected, In the manufacture approach of a liquid crystal display of providing the sealing agent applied in the direction which intersects the aforementioned electrode line and the electrode link between the aforementioned electrode pads, and the gate dielectric film formed on the aforementioned substrate and an organic protective coat The manufacture approach of the liquid crystal display characterized by including the phase which carries out patterning of the organic protective coat and gate dielectric film of the field where the aforementioned sealing agent is applied so that the aforementioned sealing agent may touch a substrate and directly.
[Claim 21] The phase which the aforementioned liquid crystal display possesses further the 2nd electrode link to which the 2nd electrode line, the 2nd electrode pad, and the aforementioned 2nd electrode line and the aforementioned 2nd electrode pad are connected, and carries out patterning of an aforementioned organic protective coat and gate dielectric film is the manufacture approach of the liquid crystal display according to claim 20 characterized by to include the phase which forms at least one or more holes in the organic protective coat and the gate dielectric film between the aforementioned electrode links.

[Claim 22] The aforementioned hole is the manufacture approach of the liquid crystal display according to claim 21 characterized by being extended and formed to the exterior of the field where a sealing agent is applied.
[Claim 23] The phase which carries out patterning of an aforementioned organic protective coat and gate dielectric film is the manufacture approach of the liquid crystal display according to claim 20 characterized by including the phase which forms the trough which continued in the direction in which the aforementioned sealing agent was formed in an aforementioned organic protective coat and gate dielectric film.
[Claim 24] An aforementioned organic protective coat and gate dielectric film are a liquid crystal display according to claim 23 characterized by being etched more widely than the field where the aforementioned sealing agent is applied.
[Claim 25] The manufacture approach of the liquid crystal display according to claim 23 characterized by providing further the protective layer for preventing the aforementioned electrode link touching the aforementioned sealing agent directly.
[Claim 26] The phase which forms the aforementioned protective coat is the manufacture approach of the liquid crystal display according to claim 25 characterized by being the semi-conductor pattern formed on the gate dielectric film on them when the aforementioned electrode link is a data link simultaneously formed with an electrode material like a gate link and the aforementioned gate link.
[Claim 27] The phase which forms the aforementioned protective coat is the manufacture approach of the liquid crystal display according to claim 6 characterized by including the phase which applies a transparent electrode so that the semi-conductor pattern and gate dielectric film of a data link and its lower part may be protected when the aforementioned electrode link is a data link.
[Claim 28] The width of face of the aforementioned semi-conductor pattern is the manufacture approach of the liquid crystal display according to claim 27 characterized by being set up more widely than the aforementioned data link.
[Claim 29] The electrode link to which a substrate, an electrode line, an electrode pad, and the aforementioned electrode line and the aforementioned electrode pad are connected, In the sealing agent applied in the direction which intersects the aforementioned electrode line and the electrode link between the aforementioned electrode pads, and the manufacture approach of a liquid crystal display of it being formed on the aforementioned substrate and providing gate dielectric film and an organic protective coat The manufacture approach of the liquid crystal display characterized by including the phase which carries out patterning of the organic protective coat of the field where the aforementioned sealing agent is applied so that the aforementioned sealing agent may touch the aforementioned gate dielectric film directly.
[Claim 30] The phase which carries out patterning of the aforementioned organic protective coat is the manufacture approach of the liquid crystal display according to claim 29 characterized by including the phase which etches the organic protective coat of the part where the aforementioned sealing agent is applied so that the aforementioned sealing agent may, on the whole, touch the aforementioned gate dielectric film.
[Claim 31] The manufacture approach of the liquid crystal display according to claim 30 characterized by providing further the protective coat for protecting the aforementioned data link between the aforementioned data link and a sealing agent when the aforementioned electrode link is a data link.
[Claim 32] The aforementioned protective coat is the manufacture approach of the liquid crystal

display according to claim 31 characterized by being a transparent electrode.
[Claim 33] The manufacture approach of the liquid crystal display according to claim 30 characterized by being formed more widely than the field where the sealing agent of the above [the etching field of the aforementioned organic protective coat] is applied.
[Claim 34] The phase which carries out patterning of the aforementioned organic protective coat is the manufacture approach of the liquid crystal display according to claim 29 characterized by including the phase which etches the organic protective coat of the part where the aforementioned sealing agent is applied so that the aforementioned sealing agent may touch the aforementioned gate dielectric film selectively.
[Claim 35] The manufacture approach of the liquid crystal display according to claim 34 characterized by forming so that it may be located in the outside of a part where it has the configuration of the trough which continued in the direction in which the sealing agent of the above [the etching field of the aforementioned organic protective coat] is applied, and the sealing agent of the one flank is applied.
[Claim 36] The aforementioned liquid crystal display is the manufacture approach of the liquid crystal display according to claim 34 characterized by having provided further the 2nd electrode link to which the 2nd electrode line, the 2nd electrode pad, and the aforementioned 2nd electrode line and the aforementioned 2nd electrode pad are connected, and forming the etching field of the aforementioned organic protective coat between the electrode links of said **.
[Claim 37] The manufacture approach of the liquid crystal display component according to claim 36 characterized by being formed so that it may be extended to the outside of a part where the sealing agent of the above [the both ends of the etching field of the aforementioned organic protective coat] is applied.
[Claim 38] The manufacture approach of the liquid crystal display component according to claim 36 characterized by being formed so that it may be extended to the outside of a part where the sealing agent of the above [the edge of the both sides of the etching field of the aforementioned organic protective coat] is applied.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the liquid crystal display which can make the vertical adhesive strength of the numerical aperture panel by which especially the organic compound insulator was applied strengthen, and its manufacture approach about a liquid crystal display.
[0002]
[Description of the Prior Art] Usually, a liquid crystal display (Liquid Crystal Display;LCD) displays the image applicable to a video signal on a liquid crystal panel because the liquid crystal cell arranged by the matrix gestalt adjusts light transmittance with a video signal. For this reason, the liquid crystal cell of a liquid crystal display is active. The liquid crystal panel arranged with the matrix (Active Matrix) gestalt and the actuation integrated circuit (it is called IC below Integrated Circuit;) for driving a liquid crystal cell are provided. Actuation IC etc. is usually manufactured with a chip (Chip) gestalt, when it is a TAPU (TAB;Tape Autoamted Bonding) method, it is equipped on TCP (Tape Carrier Package), or when it is a COG (Chips On Glass) method, it is equipped with it on the surface of a liquid crystal panel. In the case of the TAB

method, Actuation IC is connected to the pad section and the electric target which are prepared in a liquid crystal panel by TCP.

[0003] Reference of drawing 1 illustrates the top view to the liquid crystal panel (2) of structure which the inferior lamella (4) and the superior lamella (6) countered, and was pasted up. The liquid crystal panel (2) of drawing 1 contains the image display section (8) arranged with a matrix gestalt, and the gate pad section (12) and the data pad section (14) which are connected with the gate line of the image display section (8), and a data line. In the image display section (8), the gate line where a scan signal is impressed to an inferior lamella (4) for the data line to which a video signal is impressed crosses mutually, is arranged, and the pixel electrode which is connected to the thin film transistor for switching a liquid crystal cell to the intersection and a thin film transistor, and drives a liquid crystal cell is formed. The transparent electrode common to the front face of the light filter separated and applied by the black matrix according to cel field and a light filter is applied to the superior lamella (6). A tooth space is isolated, cel KEPPU is prepared in the interior, and the superior lamella (6) and inferior lamella (4) which have such a configuration are filled with the liquid crystal matter by the cel KEPPU. And a superior lamella (6) and an inferior lamella (4) are pasted up by the sealing agent applied to the sealing section (10) located in the outline section of the image display section (8). The gate pad section (12) and the data pad section (14) are located in the field of the edge of the inferior lamella (4) on which it is not superimposed with a superior lamella (6). The gate pad section (12) supplies the gate signal supplied from the gate actuation IC to the gate line of the image display section (8). The data pad section (14) supplies the video signal supplied from the data actuation IC to the data line of the image display section (8).

[0004] On the other hand, the protective coat for protecting a metal electrode and a thin film transistor is completely applied to the inferior lamella (6). The aforementioned pixel electrode is formed according to a cel field on this protective coat. Inorganic film like SiNx and SiOx was used for the protective coat by existing. However, since an inorganic protective coat has a large dielectric constant and it is formed by the vacuum evaporationo approach, a point with difficult making height increase is demerit. By this, the pixel electrode and data line which placed the inorganic protective coat in between had to maintain fixed spacing, for example, spacing of 3-5 micrometers, in order to minimize the coupling effectiveness by the parasitism capacity. Consequently, the magnitude of the pixel electrode which influences the numerical aperture of a liquid crystal cell inevitably decreased, and the numerical aperture was low. In order to solve this, recently, the organic substance with a comparatively low dielectric constant came to be used for a protective coat like BCB (Benzocyclobutene). Since this organic protective coat is formed by the spin coating approach with having the low dielectric constant which is about about 2.7, it has the advantage which can be formed by desired thickness. The capacity of a parasitism capacity can be initialized by such organic protective coat, and it can be made to superimpose without level spacing between data lines on a pixel electrode by it now. Consequently, the magnitude of a pixel electrode can increase and a numerical aperture can be raised now.

[0005] When fusing the vertical plate of the liquid crystal display of such a high numerical aperture using a sealing agent, a sealing agent usually contacts the organic protective coat of an inferior lamella. However, the organic protective coat has the sealing agent for which an epoxy resin is used, and the weak adhesion property. The separation phenomenon between layers is both generating **** in that spare time (Crack) arises also by the detailed impact into the part the adhesive strength is not good when the adhesive strength between an organic protective coat, a sealing agent, or gate dielectric film is not good **** [, and]. [that the reinforcement of the

very thing of an organic protective coat is weak] Consequently, there is a problem from which a liquid crystal ingredient leaks through the part the sealing agent of the vertical section of an organic protective coat and whose adhesive strength between gate dielectric film are not good. Hereafter, with reference to an accompanying drawing, the trouble of the conventional liquid crystal display will be seen in a detail.

[0006] Drawing 2 expands and illustrates a part of data link section which intersects the sealing section (10) by drawing 1 . A data link (16) is formed with a data pad (14) and a data line by drawing 2 as the connection section of the data line of a data pad (14) and the image display section. A semi-conductor pattern (18) is extended by the lower part of a data link (16) even to a data pad (14), and it is formed in it. The sealing section (10) to which a sealing agent is applied is located in the direction which crosses a data ring (16). A data pad (14) contacts the transparent electrode (17) formed on the organic protective coat through the KONTAKU hole (19) formed in the organic protective coat. At the time of iteration of the adhesion process of TCP demanded in a TAB process, this transparent electrode (17) has the role which prevents oxidation of a metal electrode while protecting the metal electrode which is a data pad (14).

[0007] Drawing 3 A illustrates the vertical section which cut the sealing section (10) illustrated by drawing 2 along with the horizontal A-A' line, and drawing 3 B expresses the vertical section which cut the sealing section (10) along with the vertical B-B' line. The laminating of gate dielectric film (22), a semi-conductor pattern (18), and the data link (16) is carried out to a target one by one on lower glass (20) by drawing 3 A thru/or drawing 3 B, and an inferior lamella (4) has the structure where the organic protective coat (24) was completely applied on it. As for the right flank of a sealing agent (11), liquid crystal (32) is poured in as the image display section by drawing 3 B. A light filter and a black matrix (26) are formed on up glass (30), and a superior lamella (6) has the structure where front spreading of the common transparent electrode (26) was carried out on it. Fusion of such an inferior lamella (6) and a superior lamella (4) is carried out by the sealing agent (11). In this case, as for an organic protective coat (24), in lower gate dielectric film (24), a sealing agent (11) has weak adhesive strength. Moreover, as for the organic protective coat (24), lower gate dielectric film (24) has weak adhesive strength. Thus, when adhesive strength with an organic protective coat (24), a sealing agent (11), or gate dielectric film (24) is weak, there is a problem from which a clearance arises also against a detailed impact and a liquid crystal ingredient leaks.

[0008] Drawing 4 expands and illustrates a part of gate link section which intersects the sealing section (10) by drawing 1 . A gate link (34) is formed with a gate pad (12) and a gate line by drawing 4 as the connection section of the gate line of a gate pad (12) and the image display section. A gate pad (12) contacts a transparent electrode (17) through the KONTAKU hole (19) formed via gate dielectric film and an organic protective coat. This transparent electrode (17) has the role from which the metal electrode which is a gate pad (12) is protected. The sealing section (10) to which a sealing agent is applied is located in the direction which intersects a gate link (34).

[0009] Drawing 5 A illustrates the vertical section which cut the sealing section (10) illustrated by drawing 4 along with the horizontal A-A' line, and drawing 5 B expresses the vertical section which cut the sealing section (10) along with the vertical B-B' line. The laminating of a gate link (34) and the gate dielectric film (22) is carried out one by one on lower glass (20) by drawing 5 A thru/or drawing 5 B, and an inferior lamella (4) has the structure where the organic protective coat (24) was completely applied on it. A light filter and a black matrix (26) are formed on up glass (30), and a superior lamella (6) has the structure where the common transparent electrode

(26) was completely applied on it. Fusion of such an inferior lamella (6) and a superior lamella (4) is carried out by the sealing agent (11). In this case, when a sealing agent (11) contacts an organic protective coat (24), it has weak adhesive strength. Moreover, as for the organic protective coat (24), lower gate dielectric film (24) has weak adhesive strength. Thus, when adhesive strength with an organic protective coat (24), a sealing agent (11), or gate dielectric film (24) is weak, there is a trouble that a clearance is generated also against a detailed impact and liquid crystal leaks.

[0010] As a result, the liquid crystal display with a high numerical aperture with which the conventional organic protective coat was applied has the trouble that a clearance occurs easily also against the impact of the detailed exterior, and liquid crystal leaks through the clearance, when an organic protective coat has a weak adhesion property with a sealing agent and gate dielectric film.

[0011]

[Problem(s) to be Solved by the Invention] Therefore, the object of this invention is offering the liquid crystal display which has the structure a sealing agent and inferior lamella adhesive strength being made to strengthen with the liquid crystal display of a high numerical aperture with which the organic protective coat was applied. Other objects of this invention are offering the liquid crystal display manufacture approach a sealing agent and inferior lamella adhesive strength being made to strengthen with the liquid crystal display of a high numerical aperture with which the organic protective coat was applied again.

[0012]

[Means for Solving the Problem] In order to attain the aforementioned object, the liquid crystal display by this invention is characterized by providing a substrate, and the organic protective coat by which was formed on the substrate and patterning was carried out so that a sealing agent might touch a substrate and directly and gate dielectric film. The liquid crystal display by this invention is characterized by providing the organic protective coat by which patterning was carried out so that a sealing agent might touch gate dielectric film and directly.

[0013] It is characterized by the manufacture approach of the liquid crystal display by this invention including the phase which carries out patterning of an organic protective coat and the gate dielectric film so that a ** sealing agent may touch a substrate and directly. It is characterized by the manufacture approach of the liquid crystal display by this invention including the phase which carries out patterning of the organic protective coat so that a sealing agent may touch gate dielectric film.

[0014]

[Function] The adhesive strength of a sealing agent and an inferior lamella can be made to strengthen with removing selectively or extensively the organic protective coat and gate dielectric film of a field with which a sealing agent is applied, and making it a sealing agent touch a glass substrate and directly by the liquid crystal display by this invention, and its manufacture approach. Moreover, the adhesive strength of a sealing agent and an inferior lamella can be made to strengthen with removing selectively or extensively the organic protective coat and gate dielectric film of a field with which a sealing agent is applied, and a sealing agent being touched gate dielectric film and directly by the liquid crystal display component by this invention, and its manufacture approach. The leakage of the liquid crystal ingredient by the external impact can be prevented by weakening of the adhesive strength of a sealing agent, an organic protective coat or an organic protective coat, and gate dielectric film with the liquid crystal display of a high numerical aperture with which the organic protective coat was applied

by this.
[0015]
[Embodiment of the Invention] Hereafter, the desirable example of this invention will be explained to a detail with reference to drawing 6 thru/or drawing 25 . Drawing 6 expands selectively the data link section of the liquid crystal display by the 1st example of this invention, and illustrates it. A data link (16) is formed with the data line of a data pad (14) and the image display section by drawing 6 . A data pad (14) is electrically connected with a transparent electrode (17) through the KONTAKU hole (19) formed in the organic protective coat. A semi-conductor pattern (18) is extended by the lower part of a data link (16) even to a data pad (14), and it is formed in it. The sealing section (10) to which a sealing agent is applied is located in the direction which crosses a data link (16). Generating of air bubbles can be prevented at the time of spreading of a sealing agent by a hole (40) being extended to the outline section of the sealing section (10), and a sealing agent being formed by carrying out patterning of the organic protective coat and gate dielectric film which are located in the sealing section (10) between data links (16), and forming many holes (40).
[0016] Drawing 7 illustrates the vertical section of the inferior lamella which cut the sealing section (10) in which the hole (40) was formed along with the A-A' line by drawing 6 . It is as follows if the manufacture approach of the data link section by the 1st example of this invention is seen with reference to drawing 6 and drawing 7 . After carrying out sequential formation of a semi-conductor pattern (18) and the data link (16) on this gate dielectric film (22), an organic protective coat (24) is formed in the whole surface. A hole (40) is formed by carrying out patterning of the organic protective coat (24) and gate dielectric film of the location where a sealing agent (11) is applied depending on the method of a chemical engraving of the dry type using degree the mask pattern one by one. In this case, it is made for the edge by the side of one of a hole (40) to be located in the outside of the sealing section (10). A sealing agent (11) is applied to the sealing [degree] section (10), and fusion of a superior lamella and the inferior lamella is carried out. In this case, the adhesive strength of a sealing agent (11) and an inferior lamella can be made to strengthen with a sealing agent (11) contacting lower glass (20) directly selectively through a hole (40).
[0017] To drawing 8 , the gate link section of the liquid crystal display by the 1st example of this invention was expanded selectively, and was illustrated. A gate link (34) is formed with the gate line of a gate pad (12) and the image display section by drawing 8 . A gate pad (12) is electrically connected with a transparent electrode (17) through the KONTAKU hole (19) formed via gate dielectric film and an organic protective coat. The sealing section (11) to which a sealing agent is applied is located in the direction which crosses a gate link (34). In this case, it is made for a sealing agent to paste up directly selectively with lower glass through a hole (40) by carrying out patterning of the organic protective coat and gate dielectric film which are located in the sealing section (10) between the gate and a link (34) identically to the data link section mentioned above, and forming many holes (40). It prevents that air bubbles are generated at the time of spreading of a sealing agent by a hole (40) extending to the outline section of the sealing section (10), and being formed especially.
[0018] The vertical section of the inferior lamella which cut the sealing section (10) in which the hole (40) was formed along with the A-A' line by drawing 8 is the same as that of what was illustrated by drawing 7 mentioned above. It is as follows if the manufacture approach of the gate link section by the 1st example of this invention is seen with reference to drawing 7 and drawing 8 . A gate link (34) is formed on lower glass (20), and gate dielectric film (22) is formed in the

whole surface. After forming an organic protective coat (24) all over this gate dielectric film (22), a hole (40) is formed by carrying out patterning of the organic protective coat (24) and gate dielectric film (22) of the location where a sealing agent (11) is applied depending on the method of a chemical engraving of the dry type using a mask pattern to a target one by one. In this case, it is made for the edge by the side of one of a hole (40) to be located in the outside of the sealing section (10). A sealing agent (11) is applied to the sealing [degree] section (10), and fusion of a superior lamella and the inferior lamella is carried out. In this case, the adhesive strength of a sealing agent (11) and an inferior lamella can be made to strengthen with a sealing agent (11) making lower glass (20) contact directly selectively through a hole (40).

[0019] To drawing 9 , the data link section of the liquid crystal display by the 2nd example of this invention was expanded selectively, and was illustrated. Both data links (44) form a data pad (42) by drawing 9 using the same metallic material as a gate line at the time of formation of a gate line. This data link (44) is electrically connected with the data line (50) formed in a different layer through the transparent electrode (17) formed in the KONTAKU hole (19). If it puts in another way, the data line (50) formed on gate dielectric film will be electrically connected with the data link (44) formed in the lower part of gate dielectric film via the transparent electrode (17) formed in the KONTAKU hole (19). A semi-conductor pattern (46) is located on the data link (44) which intersects the sealing section (10). It is made for a sealing agent to paste up with a semi-conductor pattern (46) and lower glass by etching all of the organic protective coat of the sealing section (10), and the gate dielectric film except the part in which the semi-conductor pattern (46) was formed. In this case, when the area which a sealing agent and lower glass paste up becomes larger, the adhesive strength of a sealing agent and an inferior lamella is strengthened more. Generating of air bubbles can be prevented at the time of spreading of a sealing agent by making larger than the width of face of the sealing section (10) width of face of the field (48) where an organic protective coat and gate dielectric film are etched especially.

[0020] drawing 10 is ****** about the vertical section of the inferior lamella which cut the sealing section (10) of drawing 9 along with the A-A' line. It is as follows if the manufacture approach of the data link section by the 2nd example of this invention is seen with reference to drawing 10 . After forming a data link (44) on lower glass (20), gate dielectric film (22) is completely applied on it. A semi-conductor pattern (46) is formed on a gate insulating layer (22), and an organic protective coat is completely applied on it. The gate insulating layer (22) except the part in which the organic protective coat (24) and semi-conductor pattern (46) of the sealing section were formed using degree the mask pattern is etched altogether. In this case, width of face of the field (48) where an organic protective coat (24) and gate dielectric film are etched is made larger than the width of face of the sealing section (10). At the time of etching of gate dielectric film, a semi-conductor pattern (46) acts with an ETCHISU tapper (Etchstopper), and protects the gate dielectric film (22) and the data link (44) of the lower part. For this reason, the width of face of a semi-conductor pattern (46) is set up more widely than the width of face of a data link (44). Then, a sealing agent (11) is applied to the sealing section (10), and fusion of a superior lamella and the inferior lamella is carried out. In this case, the adhesion property of a sealing agent (11) and an inferior lamella can be made to strengthen with a sealing agent (11) contacting lower glass (20) and a semi-conductor pattern (46).

[0021] To drawing 11 , the gate link section of the liquid crystal display by the 2nd example of this invention was expanded selectively, and was illustrated. A gate link (34) is formed with a gate pad (12) and a gate line by drawing 11 . A gate pad (132) is electrically connected with a transparent electrode (17) through the KONTAKU hole (19) formed via gate dielectric film and

an organic protective coat. The semi-conductor pattern (46) for protecting a gate link (34) is formed after the gate link (34) which intersects the sealing section (10). It is made for a sealing agent to contact a semi-conductor pattern (46) and lower glass by etching all of the organic protective coat located in the sealing section (10), and the gate dielectric film except the part in which the semi-conductor pattern (46) was formed. In this case, when the area which a sealing agent and lower glass paste up becomes larger, the adhesive strength of a sealing agent and an inferior lamella is strengthened more. Generating of air bubbles can be prevented at the time of spreading of a sealing agent by making larger than the width of face of the sealing section (10) width of face of the field (48) where an organic protective coat and gate dielectric film are etched especially. The vertical section of the inferior lamella which cut the sealing section (10) along with the A-A' line by drawing 11 has the same structure as drawing 10 mentioned above, when a gate link (34) is substituted for a data link (44).

[0022] Drawing 12 expands selectively the data link section of the liquid crystal display by the 2nd example of this invention, and illustrates it. A data pad (14) and a data link (16) are formed in the data line and coincidence of the image display section by drawing 12 . A data link (16) is electrically connected with a transparent electrode (17) through the KONTAKU hole (19) formed via the organic protective coat. A semi-conductor pattern (18) is formed in the lower part of a data link (16). The part (18a) located in the sealing section (10) by this semi-conductor pattern (18) prevents that act as a dirty stopper (Etchstopper) and the undercut (Under-cut) of the gate dielectric film (22) of the pattern (18a) lower part of a semi-conductor is carried out at the time of etching of gate dielectric film. For this reason, the width of face of the semi-conductor pattern (18a) located in the sealing section (10) is widely set up compared with a different part. All of the organic protective coat of the sealing section (10) and the gate dielectric film except a semi-conductor pattern (18a) part are etched. And the transparent electrode (47) which has a sealing agent (11) and a strong adhesion property from a data link (16) with protecting a data link (16) is located in the upper part of a data link (16). Since a sealing agent contacts a transparent electrode (47) and lower glass, and directly, adhesive strength with an inferior lamella is strengthened by this. Generating of air bubbles can be prevented at the time of spreading of a sealing agent by making width of face of the etching section (48) especially larger than the width of face of the sealing section (10).

[0023] Drawing 13 illustrates the vertical section of the inferior lamella which cut the sealing section (10) which intersects a data link (16) along with the A-A' line by drawing 12 . This drawing is referred to and it is the 3rd of this invention. The manufacture approach of the link section by the example is explained. A gate insulating layer (22) is completely applied on the lower glass (20) with which the gate line was formed. A semi-conductor pattern (18a) is formed on a gate insulating layer (22). The semi-conductor pattern (18a) in the sealing section (10) sets up width of face widely from a part which is different in order to prevent that the undercut of the gate insulating layer (22) of the lower part is carried out as a dirty stopper in the etching process of future gate dielectric film (22). After forming a data link (16) with a data line and a data pad on a semi-conductor pattern (18a), an organic protective coat is completely applied on it. The gate insulating layer (22) except the organic protective coat of the sealing section (10) and the part of a semi-conductor pattern (18a) is altogether etched using degree the mask pattern. Then, after forming a transparent electrode (47) so that a data link (16), a semi-conductor pattern (18a), and gate dielectric film (22) may be protected, a sealing agent (11) is applied to the sealing section (10), and fusion of the vertical plate is carried out. The adhesion property of a sealing agent (11) and an inferior lamella can be made to strengthen with making it a sealing agent (11)

paste up with lower glass (20) and a transparent electrode (47) by this.
[0024] Drawing 14 expands and illustrates the data link section of the liquid crystal display by the 4th example of this invention, and drawing 15 illustrates the vertical cross section of the inferior lamella which cut the sealing section (10) along with the A-A' line by drawing 14 . Adhesive strength is strengthened with forming many holes (52) of the organic protective coat (24) between the data links (16) which intersect the sealing section (10), and gate dielectric film (22), and a sealing agent (11) touching lower glass (20) directly through many holes (52) in drawing 14 and drawing 15 . A data link (16) is formed on the lower glass (20) with which the gate insulating layer (22) was formed with the data pad and the data line. A semi-conductor pattern (18) is formed in the lower part of a data link (16). An organic protective coat (24) is completely applied on the inferior lamella in which the data link (16) was formed. Many holes (52) are formed by carrying out patterning of the organic protective coat (24) and gate dielectric film (22) between the data links (16) which intersect the sealing section (10). The adhesive strength of a sealing agent (11) is strengthened with touching lower glass (20) directly through many holes (52) by it, when a sealing agent (11) is applied on an organic protective coat (24) by this. The organic protective coat and gate dielectric film between the gate and the link which intersects the sealing section (10) can also be made to strengthen the adhesive strength of a sealing agent (11) with forming many holes (52) identically to this.
[0025] Drawing 16 expands and illustrates the data link section of the liquid crystal display by the 5th example of this invention, and drawing 17 A and drawing 17 B illustrate the vertical cross section of the inferior lamella which cut the sealing section (10) along with the A-A' line and the B-B' line by drawing 15 , respectively. Adhesive strength is strengthened with forming the hole (54) of a line mold in the direction which crosses a data link (16) with the organic protective coat (24) and gate dielectric film (22) of the sealing section (10), and a sealing agent (11) touching lower glass (20) directly through the hole (54) of a line mold in drawing 16 thru/or drawing 17 B. A data link (16) is formed on the lower glass (20) with which the gate insulating layer (22) was formed with the data pad and the data line. A semi-conductor pattern (18) is formed in the lower part of a data link (16). An organic protective coat (24) is completely applied on the inferior lamella in which the data link (16) was formed. The hole (54) of a line mold is formed in the direction which crosses a data link (16) by carrying out patterning of the organic protective coat (24) and gate dielectric film (22) of the sealing section (10). The adhesive strength of a sealing agent (11) is strengthened with touching lower glass (20) directly through the hole (54) of a line mold by it, in case a sealing agent (11) is applied by this. The organic protective coat and gate dielectric film between the gate and the link which intersects the sealing section (10) can also be made to strengthen the adhesive strength of a sealing agent (11) with forming the hole (54) of a line mold identically to this.
[0026] Drawing 18 expands a part and illustrates the gate link section of the liquid crystal display by the 6th example of this invention. By drawing 18 , it unites with a gate pad (12) and a gate line, and a gate link (34) is formed. A gate pad (12) is electrically connected with a transparent electrode (17) through the KONTAKU hole (19) formed via gate dielectric film and an organic protective coat. It is made for a sealing agent to contact the gate dielectric film, the whole, or the partial target located in the lower part of an organic protective coat by removing the organic protective coat of the field of the sealing section (10) prepared in the direction which crosses a gate link (34). Especially the field where an organic protective coat is removed is set up like the 1st illustrated by drawing 18 so that the both-sides section or one flank might be located in the outside of the line breadth of the sealing section (10) thru/or the 3rd etching field (D1 thru/or

D3). In this case, generating of air bubbles can be prevented by air being discharged through the space between a sealing agent (11) and an organic protective coat (24) like [which was illustrated by drawing 19] at the time of spreading of a sealing agent. When the field where an organic protective coat is removed is set up like the 1st etching field (D1) illustrated by drawing 18 more widely than the line breadth of the sealing section (10), the whole sealing agent contacts gate dielectric film. When being set up so that one flank of the field where an organic protective coat is removed like the 2nd and 3rd etching field (D2, D3) may be located in the outside of the sealing section (10), a sealing agent contacts gate dielectric film selectively.

[0027] Drawing 19 illustrates the vertical section which cut the sealing section (10) illustrated by drawing 18 along with the horizontal A-A' line. It is as follows if the manufacture approach of the gate link section by this invention is seen with reference to drawing 19 . A gate link (34) is formed on lower glass (20), and a gate insulating layer (22) is formed in the whole surface. After forming an organic protective coat (24) all over this gate insulating layer (22), it is begun to etch the organic protective coat (24) of the location where a sealing agent (11) is applied using a mask pattern. In this case, it is made for the both-sides section of an organic protective coat (24) etching field or one flank to be located in the outside of the line breadth of the sealing section where a sealing agent is applied. A sealing agent (11) is applied to the sealing [degree] section (10), and fusion of a superior lamella and the inferior lamella is carried out. In this case, a sealing agent (11) can make the adhesive strength of a sealing agent (11) and an inferior lamella strengthen with being contacted with the gate dielectric film (22) which is an inorganic substance.

[0028] Drawing 20 expands selectively the data link section of the liquid crystal display by the 6th example of this invention, and illustrates it. By drawing 20 , it unites with a data pad (14) and a data line, and a data link (16) is formed. A data pad (14) is electrically connected with a transparent electrode (17) through the KONTAKU hole (19) formed in the organic protective coat. The gate dielectric film, the whole, or the partial target located in the lower part of an organic protective coat is made for a sealing agent to be contacted by removing the organic protective coat of the field of the sealing section (10) prepared in the direction which crosses a data link (16). In this case, a transparent electrode (56) with a sufficient sealing agent and a sufficient adhesion property is formed more in the upper part of the data link (16) joined to a sealing agent with protecting a data link (16). At the time of spreading of a sealing agent, in order to prevent generating of air bubbles, the field where an organic protective coat is removed is set up so that the both-sides section or one flank may be located in the direction of the outside of the line breadth of the sealing section (10) like the 1st illustrated by drawing 20 thru/or the 3rd etching field (D1 thru/or D3).

[0029] Drawing 21 illustrates the vertical section which cut the sealing section (10) illustrated by drawing 20 along with the horizontal A-A' line. With reference to this drawing, the manufacture approach of the data link section by this invention is indicated. A gate link (34) is formed on lower glass (20), and a gate insulating layer (22) is formed in the whole surface. After forming a data link (16) on this gate insulating layer (22), an organic protective coat (24) is formed in the whole surface. The organic protective coat (24) of the location where a sealing agent (11) is applied using degree the mask pattern is etched. In this case, it is made for the both-sides section of an organic protective coat (24) etching field or one flank to be located in the outside of the line breadth of the sealing section where a sealing agent is applied. Then, a transparent electrode (56) is formed in the upper part of the data link (16) exposed by etching of an organic protective coat. A sealing agent (11) is applied to the sealing [degree] section (10), and fusion of a

superior lamella and the inferior lamella is carried out. In this case, the adhesive strength of a sealing agent (11) and an inferior lamella can be made to strengthen with a sealing agent (11) being contacted with gate dielectric film (22) and a transparent electrode (56).
[0030] Drawing 22 expands and illustrates a part of gate link section of the liquid crystal display by the 7th example of this invention. It is made for a sealing agent to be selectively contacted with the gate dielectric film located in the lower part of an organic protective coat by removing selectively the organic protective coat of the field of the sealing section (10) prepared in the direction which crosses a gate link (34) by drawing 22 . In this case, the hole (58, 60, 62) of the line gestalt located in a line with the organic protective coat between the gate and a link (34) is formed. Especially, at the time of spreading of a sealing agent, in order to prevent generating of air bubbles, the both ends or the 1 side edge section of a hole of a line is extended and formed to the outside of the sealing section (10). Concretely, like the 1st line haul (58), extend both ends to the outside of the sealing section (10), and they are formed, or both ends are extended and formed to the outside of the sealing section (10) like the 2nd or 3rd line haul (60 62).
[0031] Drawing 23 illustrates the vertical section which cut the sealing section (10) illustrated by drawing 22 along with the horizontal A-A' line. With reference to this drawing, the manufacture approach of the gate link section by this invention is shown below. A gate link (34) is formed on lower glass (20), and a gate insulating layer (22) is formed in the whole surface. After forming an organic protective coat (24) all over this gate insulating layer (22), the organic protective coat (24) of the location where a sealing agent (11) is applied using a mask pattern is etched. If it puts in another way, a line haul (58, 60, 62) will be formed in the organic protective coat (24) between the gate and a link (34). In this case, the both ends or the 1 side edge section of a line haul (58, 60, 62) extends and forms to the outside of the sealing section. A sealing agent (11) is applied to the sealing [degree] section (10), and fusion of a superior lamella and the inferior lamella is carried out. The adhesive strength of a sealing agent (11) and an inferior lamella can be made to strengthen with a sealing agent (11) contacting gate dielectric film (22) selectively by this.
[0032] Drawing 24 expands and illustrates a part of data link section of the liquid crystal display by the 7th example of this invention. It is made for a sealing agent to be selectively contacted with the gate dielectric film located in the lower part of an organic protective coat by removing selectively the organic protective coat of the field of the sealing section (10) prepared in the direction which crosses a data link (16) by drawing 24 . In this case, the hole (58, 60, 62) of the line gestalt located in a line with the data link (16) is formed in the organic protective coat between data links (16). Especially, at the time of spreading of a sealing agent, in order to prevent generating of air bubbles, the both ends or the 1 side edge section of a hole of a line is extended and formed to the outside of the sealing section (10). Concretely, like the 1st line haul (58), extend both ends to the outside of the sealing section (10), and they are formed, or both ends are extended and formed to the outside of the sealing section (10) like the 2nd or 3rd line haul (60 62).
[0033] Drawing 25 illustrates the vertical section which cut the sealing section (10) illustrated by drawing 23 along with the horizontal A-A' line. With reference to this drawing, the manufacture approach of the data link section by this invention is shown below. A gate insulating layer (22) is formed all over lower glass (20). After forming a data link (16) on this gate insulating layer (22), an organic protective coat (24) is formed in the whole surface. The organic protective coat (24) of the location where a sealing agent (11) is applied using degree the mask pattern is etched selectively. If it puts in another way, a line haul (58, 60, 62) will be formed in the organic

protective coat (24) between data links (16). In this case, the both ends or the 1 side edge section of a line haul (58, 60, 62) is extended and formed to the outside of the sealing section. A sealing agent (11) is applied to the sealing [degree] section (10), and fusion of a superior lamella and the inferior lamella is carried out. In this case, the adhesive strength of a sealing agent (11) and an inferior lamella can be made to strengthen with a sealing agent (11) contacting gate dielectric film (22) selectively.

[0034]

[Effect of the Invention] According to the liquid crystal display by this invention, and its manufacture approach, the adhesive strength of a sealing agent and an inferior lamella can be made to strengthen with removing selectively or extensively the organic protective coat and gate dielectric film of a field with which a sealing agent is applied, and making it a sealing agent touch a glass substrate directly, as mentioned above. Moreover, the adhesive strength of a sealing agent and an inferior lamella can be made to strengthen with removing selectively or extensively the organic protective coat and gate dielectric film of a field with which a sealing agent is applied, and contacting a sealing agent gate dielectric film and directly by the liquid crystal display component by this invention, and its manufacture approach. By this, the liquid crystal ingredient leakage by the external impact accompanying weakening of the adhesive strength of a sealing agent, an organic protective coat or an organic protective coat, and gate dielectric film can be prevented with the liquid crystal display with a big numerical aperture with which the organic protective coat was applied.

[0035] Through the content explained above, if it is this contractor, it turns out that various modification and corrections are possible in the range which does not deviate from the technical thought of this invention. Therefore, the technical range of this invention must be appointed not only by the content indicated by detailed explanation of a description but by the claim.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Drawing 1 is a top view showing the usual liquid crystal panel.

[Drawing 2] Drawing 2 is the top view which expanded and expressed with drawing 1 a part of data link section which intersects the sealing section.

[Drawing 3] Drawing 3 A expresses the vertical cross section which cut the sealing section illustrated by drawing 2 along with the A-A' line, and drawing 3 B is a cross section showing the vertical cross section cut along with the B-B' line.

[Drawing 4] Drawing 4 is the top view which expanded and expressed with drawing 1 a part of gate link section which intersects the sealing section.

[Drawing 5] Drawing 5 A expresses the vertical cross section which cut the sealing section illustrated by drawing 4 along with the A-A' line, and drawing 5 B is a cross section showing the vertical cross section cut along with the B-B' line.

[Drawing 6] Drawing 6 is the top view which expanded selectively the data link section of the liquid crystal display by the 1st example of this invention, and expressed it.

[Drawing 7] Drawing 7 A is the vertical sectional view of the inferior lamella which cut the sealing section illustrated by drawing 6 along with the A-A' line.

[Drawing 8] Drawing 8 is the top view which expanded selectively the gate link section of the

liquid crystal display by the 1st example of this invention, and expressed it.
[Drawing 9] Drawing 9 is the top view which expanded selectively the data link section of the liquid crystal display by the 2nd example of this invention, and expressed it.
[Drawing 10] Drawing 10 is the vertical sectional view of the inferior lamella which cut the sealing section illustrated by drawing 9 along with the A-A' line.
[Drawing 11] Drawing 11 is the top view which expanded selectively the gate link section of the liquid crystal display by the 2nd example of this invention, and expressed it.
[Drawing 12] Drawing 12 is the top view which expanded selectively the data link section of the liquid crystal display by the 3rd example of this invention, and expressed it.
[Drawing 13] Drawing 13 is the vertical sectional view of the inferior lamella which cut the sealing section illustrated by drawing 12 along with the A-A' line.
[Drawing 14] Drawing 14 is the top view which expanded selectively the data link section of the liquid crystal display by the 4th example of this invention, and expressed it.
[Drawing 15] Drawing 15 is the vertical sectional view of the inferior lamella which cut the sealing section illustrated by drawing 14 along with the A-A' line.
[Drawing 16] Drawing 16 is the top view which expanded selectively the data link section of the liquid crystal display by the 5th example of this invention, and expressed it.
[Drawing 17] Drawing 17 A and drawing 17 B are the vertical sectional views of the inferior lamella which cut the sealing section illustrated by drawing 15 along with the A-A' line and the B-B' line.
[Drawing 18] Drawing 18 is the top view which expanded selectively the gate link section of the liquid crystal display by the 6th example of this invention, and expressed it.
[Drawing 19] Drawing 19 is the vertical sectional view of the inferior lamella which cut the sealing section illustrated by drawing 18 along with the A-A' line.
[Drawing 20] Drawing 20 is the top view which expanded selectively the data link section of the liquid crystal display by the 6th example of this invention, and expressed it.
[Drawing 21] Drawing 21 is the vertical sectional view of the inferior lamella which cut the sealing section illustrated by drawing 20 along with the A-A' line.
[Drawing 22] Drawing 22 is the top view which expanded selectively the gate link section of the liquid crystal display by the 7th example of this invention, and expressed it.
[Drawing 23] Drawing 23 is the vertical sectional view of the inferior lamella which cut the sealing section illustrated by drawing 22 along with the A-A' line.
[Drawing 24] Drawing 24 is the top view which expanded selectively the data link section of the liquid crystal display by the 7th example of this invention, and expressed it.
[Drawing 25] Drawing 25 is the vertical sectional view of the inferior lamella which cut the sealing section illustrated by drawing 24 along with the A-A' line.
[Description of Notations]
2: Liquid crystal panel 4: Inferior lamella
6: Superior lamella 8: Image display section
10: Sealing section 11: Sealing agent
12: Gate pad section 14: Data pad section
16 44: Data link 17: Transparent electrode
18, 18a, 46: Semi-conductor pattern 19: KONTAKU hole
20: Lower glass 22: Gate dielectric film
22: Gate insulating layer 24: Organic protective coat
26: Matrix 30: Up glass

32: Liquid crystal 34: Gate link
40: Hole 48: Field
50: Data line 52: Many holes
54: The hole of a line mold
58, 60, 62: The hole of a line gestalt
58: The 1st line haul 60: The 1st line haul
62: The 3rd line haul